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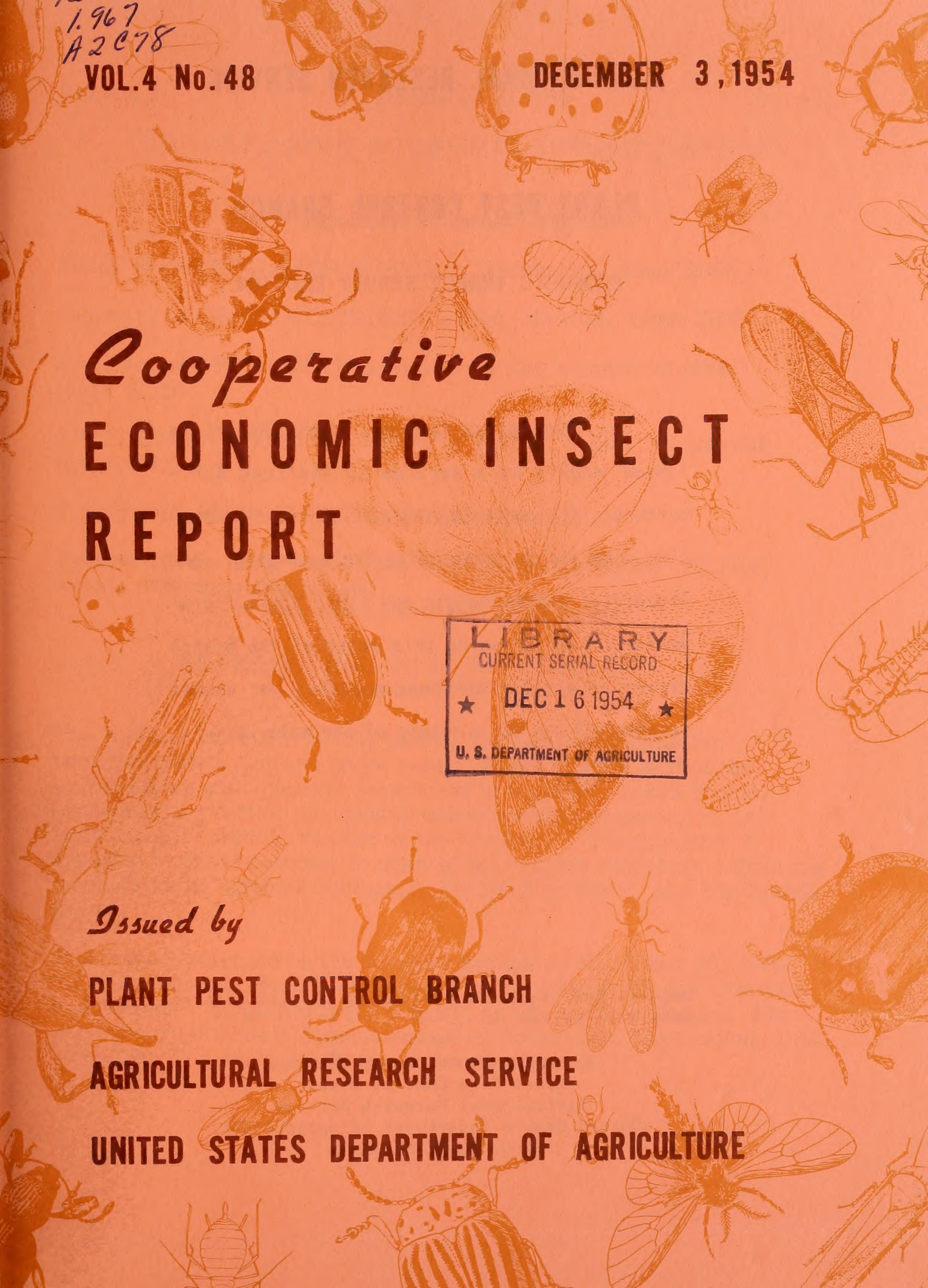

Cooperative ECONOMIC INSECT REPORT

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U. S. DEPARTMENT OF AGRICULTURE

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PLANT PEST CONTROL BRANCH

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL BRANCH

ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Control Branch
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Volume 4 December 3, 1954 No. 48

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

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Summary of GYPSY MOTH defoliation during summer of 1954. (page 1053).

FRUIT INSECT conditions - 1954 - in Yakima Valley, Washington. (page 1054).

Survey methods for PLUM CURCULIO. (page 1055).

Reports in this issue are for the week ending November 23, 1954, unless otherwise designated.

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WEATHER BUREAU'S 30-DAY OUTLOOK
December 1954

The Weather Bureau's 30-day outlook for December calls for temperatures to average above normal in the eastern half of the United States with greatest departures in the Great Lakes region. In the western half of the country below normal temperatures are indicated with coldest weather in the Northwest. Precipitation is expected to exceed normal in most of the country except for subnormal amounts in the extreme Southeast, Pacific Northwest, and Rio Grande Valley.

This report released by the Weather Bureau on November 30, 1954. Weather forecast given here is based on the official 30-day "Resume and Outlook," published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington, D.C. Price: $4.80 a year, $2.40 for six months.

WEATHER FOR THE WEEK ENDING NOVEMBER 30, 1964

Last week was unseasonably warm west of the Mississippi River and in the Northeast, particularly in the northern Rocky Mountain States where temperatures averaged as much as 15 degrees above normal for the second consecutive week. In contrast the week was abnormally cool in the Southeast where minima fell to 32 degrees as far south as Tallahassee, Fla., on Thursday and Friday. No precipitation occurred in the lower Great Plains and Southwest, and was very light elsewhere west of the Mississippi River, except along the north Pacific Coast where amounts ranged up to 4 inches in northwestern Washington. Droughty conditions intensified in the western portions of the central and lower Great Plains where strong winds on a few days speeded soil moisture depletion and caused soil erosion in several areas.

Precipitation, totaling over one-half inch in nearly all areas east of the Mississippi River, occurred frequently north of the Ohio River and in the Northeast, and over all of the East the last 2 days of the period when moderate to heavy rains in the Southeast greatly improved topsoil moisture conditions in Alabama, Georgia, and South Carolina, although the subsoil remained dry. Considerable snow fell in northern areas during the closing days of the period, covering the ground from central Montana to northern Wisconsin, with depths of 3 inches reported in northeastern North Dakota, and northern portions of Minnesota and Wisconsin. In the East snow accumulations in the Appalachians ranged up to 6 inches or more from western Maryland northward through New York State.

Fog was the main weather feature in parts of the far West, especially in California. In the Los Angeles area dense fog, persisting from the 25th through the 28th, hampered transportation and was responsibile for many accidents. In California's Central Valley fog either prevented or greatly hampered harvest operations. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

EUROPEAN CORN BORER (Pyrausta nubilalis) - NORTH CAROLINA - Larvae found in corn near Asheville. Light infestation. (Jones).

HESSIAN FLY (Phytophaga destructor) - PENNSYLVANIA - Serious damage to wheat in central area. Also reported heavy in barley. (Gesell). KANSAS - Light infestations on wheat plants in a few fields in Thomas, Sheridan, Osborne and Chase Counties. (Matthew).

YELLOW CLOVER APHID (Myzocallis trifolii) - ARIZONA - Has been causing heavy damage to alfalfa seedlings in some areas. Infestation has been severe enough to kill two-inch plants at Roll, Mesa, Tucson and at Parker where 200 acres replanted. Infestation reported general in Salt River Valley on alfalfa of all ages. Infestation in Yuma area has declined again. (Ariz. Coop. Rept.).

ARMYWORM (Pseudaletia unipuncta) - ARKANSAS - Total of 65 adults collected in light trap at Stuttgart during week of November 22. (Warren).

A SPIDER MITE (Tetranychina apicalis) - FLORIDA - All stages infesting white clover at Gainesville. First report for 1954-55 season. (Kuitert).

LUPINE MAGGOT (Hylemya lupini) - FLORIDA - All stages in lupine at Gainesville. First appearance of season for eggs and larvae. (Kuitert).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - FLORIDA - Infesting corn in Dade County. (Wolfenbarger).
(See next page for SWEETCLOVER WEEVIL).

FRUIT INSECTS

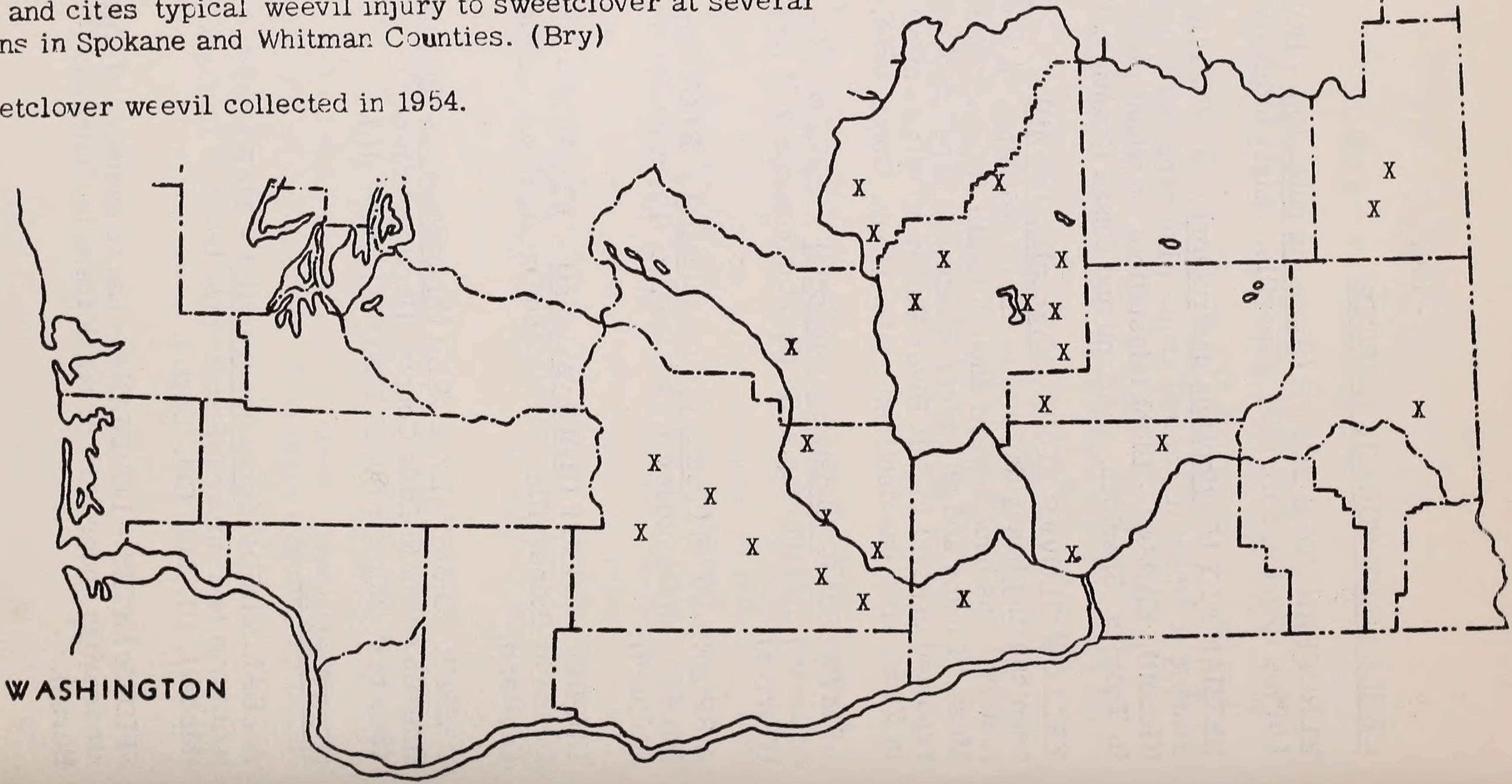
A LEAF MINER (Ornix geminatella) - MARYLAND - This unspotted tentiform leaf miner infested apple trees at Hancock in large numbers this fall. (U. Md. Ent. Dept.).

SPIDER MITES - LOUISIANA - Large numbers of Tetranychus sp. hibernating under bark of peach trees in Claiborne Parish. (Newsom, Burns).

SWEETCLOVER WEEVIL SURVEY IN WASHINGTON - 1954

The sweetclover weevil (Sitona cylindricollis) was first reported from Washington near Cheney, Spokane County in 1952. To determine the distribution of this insect a preliminary survey was started in the early summer of 1954. Bry and Frick found sweetclover weevils in the following counties: Adams, Benton, Douglas, Franklin, Grant, Kittitas and Yakima. (specimens determined by M. Hatch, Univ. of Wash.). The first adults were taken in Benton County in early June and the last collections were made in Yakima County, September 2. In all cases except in Grant County, the weevils were taken from sweetclover. Near Scalley, in Grant County, they were collected from both sweetclover and alfalfa. Johansen reports S. cylindricollis from Wawawai in Whitman County and cites typical weevil injury to sweetclover at several locations in Spokane and Whitman Counties. (Bry)

X Sweetclover weevil collected in 1954.



LEAFHOPPERS (Empoasca spp.) - ARIZONA - Scarring oranges and tangerines in most areas of Salt River Valley. (Ariz. Coop. Rept.).

THRIPS (prob. Frankliniella occidentalis) - ARIZONA - Damaging mature navel oranges in Salt River Valley by feeding on peel where fruits in contact. (Ariz. Coop. Rept.).

BLACK-MARGINED APHID (Monellia costalis) - ARIZONA - Very abundant on pecans in Phoenix area. Leaves and area under trees covered with honeydew. (Ariz. Coop. Rept.).

BLACK SCALE (Saissetia oleae) - ARIZONA - Abundant on figs in some areas near Mesa. (Ariz. Coop. Rept.).

TRUCK CROP INSECTS

CABBAGE APHID (Brevicoryne brassicae) - WASHINGTON - Moderate numbers in brussels sprouts in Sumner area. (Doucette).

THRIPS - ARIZONA - Very abundant on lettuce in some fields in Salt River Valley. (Ariz. Coop. Rept.).

COTTON INSECTS

SPIDER MITES - LOUISIANA - All stages active on cotton in Bossier Parish. Hibernating females small percentage of total population. (Newsom).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SADDLEBACK CATERPILLAR (Sibine stimulea) - FLORIDA - Severe damage to ixora (Ixora coccinea) at Hollywood. Twelve bushes completely defoliated. (Link).

A MEALYBUG (Pseudococcus n. sp) - CALIFORNIA - Found infesting 9,600 Cattleya sp. in Marin County during September. Infestation heavy on leaves. (Armitage).

AN ENGRAVER BEETLE (Ips calligraphus)- FLORIDA - Killed about 400 5-year old slash pine trees in a tract in Escambia County. (Smith).

A PINE TIP MOTH (*Rhyacionia* prob. *frustrana*) - NORTH CAROLINA Infesting young pines in Wake County. (Spink).

OBSCURE SCALE (*Chrysomphalus obscurus*) - VIRGINIA - Light to severe infestations on oaks at Warwick and Big Island during October. Twigs killed. (Plumb).

A SCALE INSECT (*Aspidiotus lataniae*) - NORTH CAROLINA - Infesting holly in Durham. (Jones).

CYCLAMEN MITE (*Tarsonemus pallidus*) - WASHINGTON - Infestations noted on aralia, azalea and African violet in greenhouses in Puget Sound area. (Doucette).

SOFT SCALE (*Coccus hesperidum*) - WASHINGTON - Infestation on camellias in greenhouses in Seattle area have caused considerable damage to blooms because of accompanying sooty mold. (Doucette).

ROSE LEAFHOPPER (*Typhlocyba rosae* - WASHINGTON - Adults numerous on foliage of roses in gardens in Sumner area. (Doucette).

INSECTS AFFECTING MAN and ANIMALS

WINTER TICK (*Dermacentor albipictus*) - RHODE ISLAND - Four engorged female ticks collected on a deer on Prudence Island, Portsmouth, October 24 by T. J. Grennan, Jr. (Mathewson).

STORED-PRODUCTS INSECTS

STORED-GRAIN INSECTS - OKLAHOMA - Over half of wheat bins in Grant and Kay Counties infested. Most numerous insects are confused flour beetle (*Tribolium confusum*) and flat grain beetle (*Laemophloeus pusillus*). (Stiles).

MISCELLANEOUS INSECTS

OLD HOUSE BORER (Hylotrupes bajulus) - ILLINOIS - Collected in wood flooring of dwelling in Granite City. (Petty).

SPIDERS - PENNSYLVANIA - Numerous reports of infestations in homes from various sections. (Adams).

CIGAR CASEBEARER -MARYLAND - Cases with larvae on doors and windows of houses in Cecil County, November 17. Somewhat of a nuisance. (U. Md., Ent. Dept.).

A SOLDIER FLY - NORTH CAROLINA - Larvae reported infesting ensilage in Clay County. (Jones).

RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

A living larva, identified as a sp. of Olethreutidae, presumably Argyroploce leucotreta Meyr., (the false codling moth), was intercepted recently in an orange in plane stores from South Africa at Detroit, Michigan. (Gower). This insect has been reported injurious to oranges, grapefruit, tangerines, peaches, guavas, persimmons, avocadoes and other fruits in parts of Southern and Central Africa. Walnuts, litchi nuts and cotton bolls have also been attacked. It is known as the false codling moth because of its resemblance in appearance, habits and type of injury to the codling moth (Carpocapsa pomonella). However it does not attack apples, pears, or quinces and is said to cause more premature fruit drop than the true codling moth. Annual estimates of damage to the orange crop in various areas varies from 2 to 50 percent. Life history studies on the false codling moth indicate pupation usually occurs on the ground but occasionally in fruit boxes or sacks. Eggs are generally deposited on the fruit but sometimes on leaves or twigs. Larvae burrow into the fruit and feed inside until mature. One larva per fruit is the usual number found. Six generations a year have been reported in Rhodesia. Living larvae of this insect have been intercepted on a number of occasions in grapefruit, oranges and tangerines from the Union of South Africa, Gold Coast and Belgian Congo at various ports. (Compiled - Plant Quarantine Branch).

SUMMARY OF INSECT CONDITIONS - 1954

UTAH

Reported by G. F. Knowlton, H. E. Dorst, H. F. Thornley,
D. W. Davis, F. V. Lieberman, L. D. Beadle,
D. M. Rees, L. W. Orr, and County Agricultural
Agents.

Cereal and Forage Insects

GRASSHOPPER outbreaks were severe in many parts of Utah. Range and crop lands were infested over large areas. Dominant species were Melanoplus mexicanus, Camnula pellucida, Aulocara elliotti, M. bivittatus, M. femur-rubrum and M. packardi. Oedaleonotus enigma was one of the dominant species in range areas of Juab, Beaver and Iron Counties. Agenotettix deorum was damaging also in these areas and in the Bryce Canyon-Panguitch area. MORMON CRICKET (Anabrus simplex) occurred in widely scattered localities, including 39,400 acres on range land in San Juan County, and outbreaks in Piute, Sanpete, Millard, Tooele, Juab, Uintah, and Box Elder Counties. Acreage baited (99 percent by aircraft) totaled 65,000 acres. Total of 175,000 acres were treated for grasshopper and Mormon cricket control, combined. ALFALFA WEEVIL (Hypera postica) damaged a large percentage of alfalfa fields not treated in early spring. LYGUS BUGS (largely Lygus elisus, L. hesperus, L. shulli) were damaging throughout season over most of Utah, on many crop and range plants. The SWEETCLOVER WEEVIL (Sitona cylindricollis) was found to occur in at least seven counties in Utah. Specimens collected at Wellsville during 1953, may be first records of this pest in Utah. CLOVER LEAF WEEVIL (Hypera punctata) and CLOVER ROOT CURCULIO (Sitona hispidula) were less injurious in alfalfa than previous season. The PEA APHID (Macrosiphum pisi) was generally much less abundant than normal. However, some damaging populations developed in spring and fall on alfalfa, and to ten percent of acreage in the Delta alfalfa seed-growing tract during July. ARMY CUTWORM (Chorizagrotis auxiliaris) was rarely in outbreak numbers, but caused local injury to some fields of alfalfa and small grains. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) developed to outbreak numbers in alfalfa in several local areas of Cache, Box Elder, Millard, and in lesser abundance in parts of other counties. Southern outbreaks, including those in Millard, Sanpete, and Sevier Counties apparently were *P. ornithogalli.* The CLOVER SEED CHALCID (*Bruchophagus gibbus*) caused economic damage in alfalfa seed-growing areas. CORN EARWORM (*Heliothis armigera*) caused moderate injury generally to both sweet corn and field corn, occasional fields 50 to 80 percent infested. No EUROPEAN CORN BORERS were found in Utah. SAP BEETLES caused very serious infestations in much of the sweet corn in southern counties, with injury occurring in home gardens as far north as Utah and Salt Lake Counties. LEAFHOPPERS sometimes became injuriously abundant in alfalfa with *Aceratagallia arida* and occasionally *Empoasca filamenta* being most abundant. *Dikraneura carneola* became locally abundant in fall on alfalfa and dryland small grains. TREEHOPPERS (*Spissistilus festinus* and *Publilia modesta*) were extremely abundant in some alfalfa fields and orchards especially in Washington and Kane Counties.

BROWN WHEAT MITE (*Petrobia latens*) caused serious damage to dryland wheat and barley in Juab, Cache, Box Elder, Tooele, Salt Lake, Utah, San Juan and Washington Counties. Extent of injury varied from one or a few fields in some counties, to several thousand acres severely affected in others. Damage decreased in areas where late June or early July rains reduced drought conditions and brown wheat mite numbers. The MITES, *Paratetranychus pratensis* damaged corn at Provo and *Penthaleus major* did local damage in Salt Lake County. SAY STINK BUG (*Chlorochroa sayi*) and WHEAT JOINTWORM (*Harmolita tritici*) were economically injurious in only a few scattered localities. In a few localities limited PALE WESTERN CUTWORM (*Agrotis orthogonia*) crop injury occurred. Damage from this and other cutworms and from the armyworm to wheat was greatest in parts of Millard, Emery, Carbon, Sanpete and San Juan Counties. Less extensive damage to small grains occurred in several other counties. FALSE CHINCH BUG (*Nysius ericae*) populations were below normal, in general. GRAIN APHIDS (*Macrosiphum granarium*, *Rhopalosiphum maidis* etc.) were generally below normal.

Fruit Insects

This was a season of below normal APHID populations, except during spring and late fall, when populations of several species sometimes became high. Much less aphid curling of foliage was evident than during 1953. The WOOLLY APPLE APHID (*Eriosoma lanigerum*) often required control in apple orchards. PEACH TREE BORER (*Sanninoidea exitiosa*) damage to stone fruits was general and about normal. In two commercial orchards at Holladay, 24 apple trees (about 28 years old) in two adjacent orchards were dying due to a heavy root attack of CALIFORNIA PRIONUS (*Prionus californicus*). Some cherry trees in Davis, Weber and Salt Lake Counties have been killed by these large larval root borers during recent years. PEAR-SLUG (*Caliroa cerasi*) caused moderate to occasionally severe damage to pear foliage in a number of counties; however, slug damage to cherries, pears and hawthorns was less extensive than that of 1953. CODLING MOTH (*Carpocapsa pomonella*) caused greater crop damage than during the preceeding two years. Irregularities in moth emergence during the late egg-laying period suggested one reason for the increased damage. A LEAF-FOOTED PLANT BUG (*Leptoglossus clypealis*) damaged ripening apricots, cherries, apples, raspberries, pears and also blossoming yucca in the most extensive and injurious outbreak to occur in many years. EUROPEAN RED MITE (*Metatetranychus ulmi*) was more widely and commonly damaging, and the TWO-SPOTTED SPIDER MITE (*Tetranychus bimaculatus*) and CLOVER MITE (*Bryobia praetiosa*) often less abundant on apple, pear, peach, cherry and prune foliage than during recent years. PEACH SILVER MITE (*Vasates cornutus*) injury occurred in Weber, Salt Lake, Utah and Washington Counties.

Total mite damage to fruits over the State was below normal, though injury was severe in several areas. *Eotetranychus willamettei* damaged apple at Holladay and Centerville and cultivated roses at Magna. *Tetranychus mcdanieli* severely damaging raspberry foliage at Pleasant Grove and Orem during July. STRAWBERRY WHITEFLY (*Trialeurodes packardi*) was much less abundant than during 1953, generally. STRAWBERRY ROOT WEEVILS (*Brachyrhinus ovatus* and *B. rugosostriatus*) damage was common while BLACK VINE WEEVIL (*B. sulcatus*) damage occurred to strawberry, raspberry and other plants in northern counties. Grape leafhopper (*Erythroneura elegans*, *E. ziczac* and spp.)damage was moderately severe to foliage of some varieties of grapes in scattered localities, and to Virginia creeper commonly throughout Utah. WESTERN GRAPE LEAF SKELETONIZER (*Harrisina brillians*) caused no economic damage during 1954. It evidently was controlled by the heavy parasite infestation of 1953 and in spring of 1954. Damage by a SPITTLEBUG (*Clastoptera lawsoni*) was present on from two to ten percent of the grape bunches in some vineyards in the Hurricane area. What appeared from larval examination to be grape berry moth (Polychrosis viteana) infested from five to ninety-five percent of the bunches of grapes in some vineyards at Hurricane. Currant APHIDS of several species, other than Capitophorus ribis on red currant, generally were below normal in injury and population. CURRANT FRUIT FLY (Epochra canadensis) attacked black currants generally.

Vegetable Insects

APHID populations were generally below normal on celery, potato, and on most vegetable crops during the season. Some Aphis gossypii damage occurred to watermelons, cantaloupes, cucumbers and squash.

BEET LEAFHOPPER (Circulifer tenellus) population in the desert-breeding areas of southern Utah, southern Nevada, southeastern California, southern Arizona and western Arizona in mid-February 1953 averaged 0.005 per square foot in 270 stops made at 10 mile intervals. General distribution of host plants occurred in 12 percent of the stops; no hosts occurred in 40 percent of the stops. The host plant area was 50 percent less than in 1953 and the leafhopper population averaged about one tenth as high. Precipitation that occurred in February and March of 1954 in the southern breeding area germinated additional host plant acreage. A survey conducted in late March over a part of the territory showed host plants were then present in 30 percent of the stops, an increase of 18 percent. In the local breeding areas of northern Utah, the population in 1954 was 0.005 per square foot and was one fourth that of 1953. The viruliferous index of the leafhoppers in February and March averaged 3 compared with 14 percent in 1953. The migration from the southern breeding area to northern Utah was first detected April 27 and averaged 0.30 per square foot of beet row from Tremonton to Payson and 0.77 from Salina to Joseph. The population in 1953 was similar to 1954 in the tomato growing area. Curly-top on tomatoes in northern Utah averaged about 4 percent with a range between 2 and 13 percent. In central Utah the leafhopper populations on sugar beets averaged 0.77 per square foot and was about sixty percent higher than in 1953. The leafhopper population in eastern Utah, averaged about .75 per square foot on sugar beets, was similar to 1953.

TOMATO FRUITWORM (Heliothis armigera) infestation in tomatoes in 1954 was so small that insecticidal applications were not warranted. The egg population on tomato leaves during the time of the main fruit set averaged less than 0.01 egg per hundred leaves. CORN EARWORM (H. armigera) infestation on early market corn in northern Utah in July averaged about 10 percent and in canning corn in August and September about 30 percent. In southern Utah the infestation on market corn in September increased to 80 to 90 percent. Damage in all areas confined principally to tip injury. TOMATO RUSSET MITE (Vasates lycopersici) reported in only two tomato fields during 1954. A VINEGAR FLY (Drosophila melanogaster) was much more abundant in 1954 than in 1953. MEXICAN BEAN BEETLE (Epilachna varivestis) damaged canning beans in several counties. POTATO PSYLLID (Paratrioza cockerelli) did severe damage to several fields of potatoes in southern Utah. A LEAFHOPPER (Empoasca filamenta) became moderately abundant and sometimes caused foliage-bleach on potatoes and other garden plants. The six-spotted leafhopper generally was less abundant than during the previous season. TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) caused less economic damage to beans than during 1953.

BLACK CUTWORM (Agrotis ypsilon) caused most severe damage to sugar beet acreage in Sevier County. HORNWORM injury on potatoes and tomatoes generally was approximately ten percent of that of 1952. PEA WEEVIL (Bruchus pisorum) was about normal in numbers. Control was conducted on most canning acreage, except in higher uninfested areas. LYGUS BUGS (particularly Lygus elisus and L. hesperus) moved from recently-cut alfalfa to damage tomato and potato plants in Davis County, and less seriously in other localities. Blossoms of cucurbits suffered from a SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) feeding in southern counties. ASPARAGUS BEETLES (Crioceris asparagi) and C. duodecimpunctata) caused less than normal damage, but the latter beetle now has spread to south of Farmington. A new outbreak of POTATO TUBERWORM (Gnorimoschema operculella) developed in parts of Iron and Washington Counties. This is the first appearance of this pest in Utah for several years. The previous tuberworm outbreak in these counties occurred approximately twenty years ago.

Insects Affecting Man and Animals

CATTLE LICE (Linognathus vituli, Haematopinus eurysternus, Bovicola bovis) caused serious annoyance throughout Utah. Many thousands of cattle were either dipped or sprayed for lice control. HOG LOUSE (Haematopinus adventicius) was of common occurrence. SHEEP KED (Melophagus ovinus) was of more than normal abundance, and troublesome generally. EAR TICK (Otobius megnini) is becoming more generally distributed with annoyance to cattle in several counties. Fly annoyance to livestock was widespread. CATTLE GRUB injury was general and about normal. POULTRY LICE AND MITES were commonly injurious in farm flocks and to a lesser degree were pests in commercial poultry housing. Owing to the prevailing drought, MOSQUITO abundance in Utah was slightly below normal during 1954. However, high populations of certain species including Culex tarsalis, Aedes dorsalis, and A. vexans were found in irrigated areas. The improper management of water was responsible for the production of numerous broods of mosquitoes in certain areas. Broods were produced with irrigation waste water, irrigation flooding of pastures, from seepage and breaks in irrigation canals, and by flooding on gun clubs and water fowl areas. Organized mosquito abatement activities were carried on in Box Elder, Davis, Salt Lake, and Weber Counties.

Shade Tree Insects

GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis) attacked foliage of a large number of cottonwood and other trees along the Virgin River. FOREST TENT CATERPILLAR (M. disstria) and MOURNING-CLOAK BUTTERFLY larvae (Nymphalis antiopa) caused some damage. BOXELDER LEAF ROLLER (Gracilaria negundana) was severely destructive to boxelder foliage in the Salt Lake-Mill Creek area, and in some other nearby areas. ELM LEAF BEETLE (Galerucella xanthomelaena) caused moderate damage to elm foliage in several northern counties. COOLEY SPRUCE GALL APHID (Chermes cooleyi) was severely damaging through gall production on blue spruce in Ogden Valley, in particular. NORWAY-MAPLE APHID (Periphyllus lyropictus) was a minor pest, after being extremely abundant during 1953. A LEAFHOPPER (Empoasca bipunctata) bleached and discolored elm foliage, and another species (Opsius stactogalus) attacked tamarix, sometimes very severely. BOXELDER BUG (Leptocoris trivitattus) was a common pest of boxelders, attacked some ripening fruits and entered many homes.

Pests of Ornamentals: SPIREA APHID (Aphis spiraecola) was conspicuously scarce, but an OLEANDER APHID (Aphis lutescens) again was injuriously abundant at St. George. Rose aphids, several species, were commonly injurious in spring, and in some cases during summer and fall.

Range Insects

Grasshoppers, Mormon cricket, lygus bugs, false chinch bugs, grassbugs, and other common pests again were numerous to damaging on many forage and browse plants on range lands. A THRIPS (Haplothrips distalis) commonly was numerous wherever greasewood was examined. A tiny case-bearing lepidopterous larva Apterona crenulella of the family Psychidae damaged range plants over several thousand acres in Box Elder County. However, damage to sages often was appreciably more serious from a leaf-tying lepidopterous larva. This latter damage was severe in western Box Elder County and appeared in other parts of Utah.

Forest Insects

BLACK HILLS BEETLE (Dendroctonus ponderosae) infestation in ponderosa pine on the Dixie National Forest and in Bryce Canyon National Park continued very aggressively in 1954. About 9,000 infested trees were treated this year and there will be a considerable reduction in the number to be treated in 1955. Control work was begun in 1951 and it now appears that the outbreak may be brought to an end within the next year or two. A localized infestation was also treated on the Fishlake National Forest, east of Beaver, Utah in 1954. A FIR NEEDLEMINER (Epinotia meritana) has caused rather severe damage to white fir in Bryce Canyon National Park during the past 6 or 8 years. Infestation was especially heavy this year and now is present in part of the adjacent Dixie National Forest. MOUNTAIN PINE BEETLE (D. monticolae) appears to be increasing rapidly in stands of lodgepole pine on the north slope of the Uinta Mountains on the Wasatch National Forest in northeastern Utah after two or three years of relatively light loss. APHIDS (Cinara spp.) on bark, and needle-infesting aphids generally were below normal in abundance.

SUMMARY - GYPSY MOTH DEFOLIATION

SUMMER OF 1954

(From aerial survey and ground observations)

Number of Acres Defoliated and the Degree of Defoliation

State	75-100%	Less than 75%	Total
*Connecticut	5,143	8,705	13,848
Maine	163,545	6,940	170,485
**Massachusetts	85,165	32,930	118,095
New Hampshire	151,530	2,485	154,015
New York	7,385	2,970	10,355
Rhode Island	-	-	-
Vermont	23,540	1,110	24,650
Total	436,308	55,140	491,448

* The Connecticut State Entomologist's office conducted the aerial survey in that State

** In Massachusetts Federal personnel made aerial observations for defoliation in Barnstable and Plymouth Counties. The Massachusetts Department of Natural Resources conducted the surveys in the remainder of the State. (Gypsy & Brown-tail Moths Cont. Proj.).

Fruit Insect Conditions, Yakima Valley, Washington, 1954

Reported by E. J. Newcomer

The growing season of 1954 in the Yakima Valley was the coolest on record, according to the U. S. Weather Bureau, whose records go back to 1910. Because of this, fruit insects were generally less injurious than usual. The CODLING MOTH, in most orchards, injured less than 0.5 percent of the fruit. ORCHARD MITES were easily controlled, and no damage was caused by them. The WOOLLY APPLE APHID was very scarce in orchards where phosphate insecticides were used, but developed to some extent in water sprouts where they were not used. In such instances, _Aphelinus_ parasitism at the end of the season was as high as 40 percent. ROSY APPLE APHID was not much in evidence, but APPLE APHID became quite numerous in some orchards in July and August. PEAR PSYLLA was quite scarce. Cherry growers sustained very little loss because of the CHERRY FRUIT FLY. The GREEN PEACH APHID was much scarcer than usual last spring, and no reports of injury by the PEACH TWIG BORER were received. The ORIENTAL FRUIT MOTH was controlled better than in 1953, as growers made more effort to do so. The BERTHA ARMYWORM caused some injury to apricots on low branches hanging in the cover crop, and there was some injury by the pandemis. In October, the WALNUT HUSK FLY was discovered in black and Persian walnuts in the city of Yakima. However, walnuts are not grown commercially in this Valley.

SURVEY METHODS

Technique in Jarring for Plum Curculio[1]

Jarring trees to obtain plum curculio adults is an old and well established practice. It was considered at one time as a valuable supplementary control measure for plum curculio on peaches. Although no longer practiced as a control measure, it is still considered a valuable tool particularly in research. Jarring is useful as a means of timing spray applications and for locating areas of heavy infestation. It may also be used as a criterion for evaluating effectiveness of spray applications.

Equipment and technique for jarring are described in this paper. The method described has been used with satisfactory results during 1949 and 1950 in the peach belts in the Arkansas River valley centered around Clarksville and in the southwestern belt near Nashville.

The sheet used in experiments in Arkansas is 4 feet by 7 feet and is attached to a light wooden frame. The frame is hinged for folding to facilitate transporting from one orchard to another. Other equipment includes a light rubber covered mallet and a small bottle fitted with a slit rubber top for collecting the beetles.

The procedure involved in using the small jarring sheet is to hold the sheet in one hand and to jar limbs by one or two sharp blows with the mallet. No attempt is made to jar an entire tree. The beetles are usually collected at the end of the jarring period. If, due to high temperature, the beetles become active, they are captured and counted immediately. The unit of measurement of curculio abundance is based on the amount of time spent jarring. In most cases a period of 5 minutes is used. If a complete record in an area is desired, four units of 5 minutes each are taken. Usually the limbs on one side of a tree are jarred and the operator then moves on to the next tree.

The principal disadvantage in using a small sheet to jar for 5 minute periods seems to be that it has been customary to think of curculio populations as the number per tree. Since this number is an arbitrary figure and is at best only an approximation, a different unit of expressing density of population should be equally satisfactory. The number of limbs jarred in 5 minutes by different individuals will undoubtedly vary somewhat, but this variation should not be nearly so great as the differences between individual trees.

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In the past jarring records have been on the basis of the number of curculios obtained per tree. This system has numerous disadvantages. The size of trees varies greatly from one orchard to another because of differences in age and growing conditions. Curculio population varies greatly among trees of fairly uniform size. This necessitates a large sample to obtain representative data. It is difficult to jar an entire tree especially if it is a large one. Unless considerable labor is available the sheets must be placed on the ground. Uneven terrain and weed growth make this impractical in many orchards.

During the summer the temperature is too high in Arkansas for satisfactory jarring during most of the daylight hours. The beetles are more active and many of them fly upon being disturbed More records can be taken during that period of the day when conditions are favorable if the small sheet is used to jar individual limbs rather than jarring entire trees. Also the small sheet can be held close to the limbs where the curculios are located. Fewer beetles will fly before hitting a sheet held close to the limbs than one on the ground. Also more beetles can be recovered from the sheet on a rigid frame since they can be removed more quickly from it than from large sheets. Thus jarring can be done with the small sheet when high temperature would make the use of large sheets on the ground impractical.

Sheets sufficiently large to cover the area under a large peach tree require several persons to hold them. The only alternative is to place them on the ground. In many Arkansas orchards the terrain is too rough to place the sheets on the ground satisfactorily. With the sheets on the ground it is difficult to jar the tree without walking on the sheets. If they are placed on bare ground they soon become soiled making it difficult to locate the curculios on them. The small sheet on a frame eliminates these difficulties. The advantages of considering the number of curculios jarred in a 5-minute period using a small sheet on a rigid frame as the unit of measurement, may be summarized as follows: Only one person is needed to take the records. More records can be taken in the same time. Difficulties due to variations in tree size, uneveness of terrain, and high temperature are decreased or eliminated. (W. D. Wylie).

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